```
# import all the necessary libraries

import pandas as pd
import matplotlib.pyplot as plt
% matplotlib inline
import seaborn as sns
sns.set_style('darkgrid')
sns.set(font_scale = 1.5)
```

```
# read the data
df = pd.read_csv("https://raw.githubusercontent.com/LearnDataSci/article-resources/master/Essential%20Statistics/middle_tn_schools.cs
df.head()
df.describe()
```

	school_rating	size	reduced_lunch	state_percentile_16	state_percentile_15	stu_teach_ratio	avg_score_15	avg_
count	347.000000	347.000000	347.000000	347.000000	341.000000	347.000000	341.000000	34
mean	2.968300	699.472622	50.279539	58.801729	58.249267	15.461671	57.004692	5
std	1.690377	400.598636	25.480236	32.540747	32.702630	5.725170	26.696450	2
min	0.000000	53.000000	2.000000	0.200000	0.600000	4.700000	1.500000	
25%	2.000000	420.500000	30.000000	30.950000	27.100000	13.700000	37.600000	3
50%	3.000000	595.000000	51.000000	66.400000	65.800000	15.000000	61.800000	6
75%	4.000000	851.000000	71.500000	88.000000	88.600000	16.700000	79.600000	8
max	5.000000	2314.000000	98.000000	99.800000	99.800000	111.000000	99.000000	9

```
df[['reduced_lunch','school_rating']].groupby(['school_rating']).describe()
```

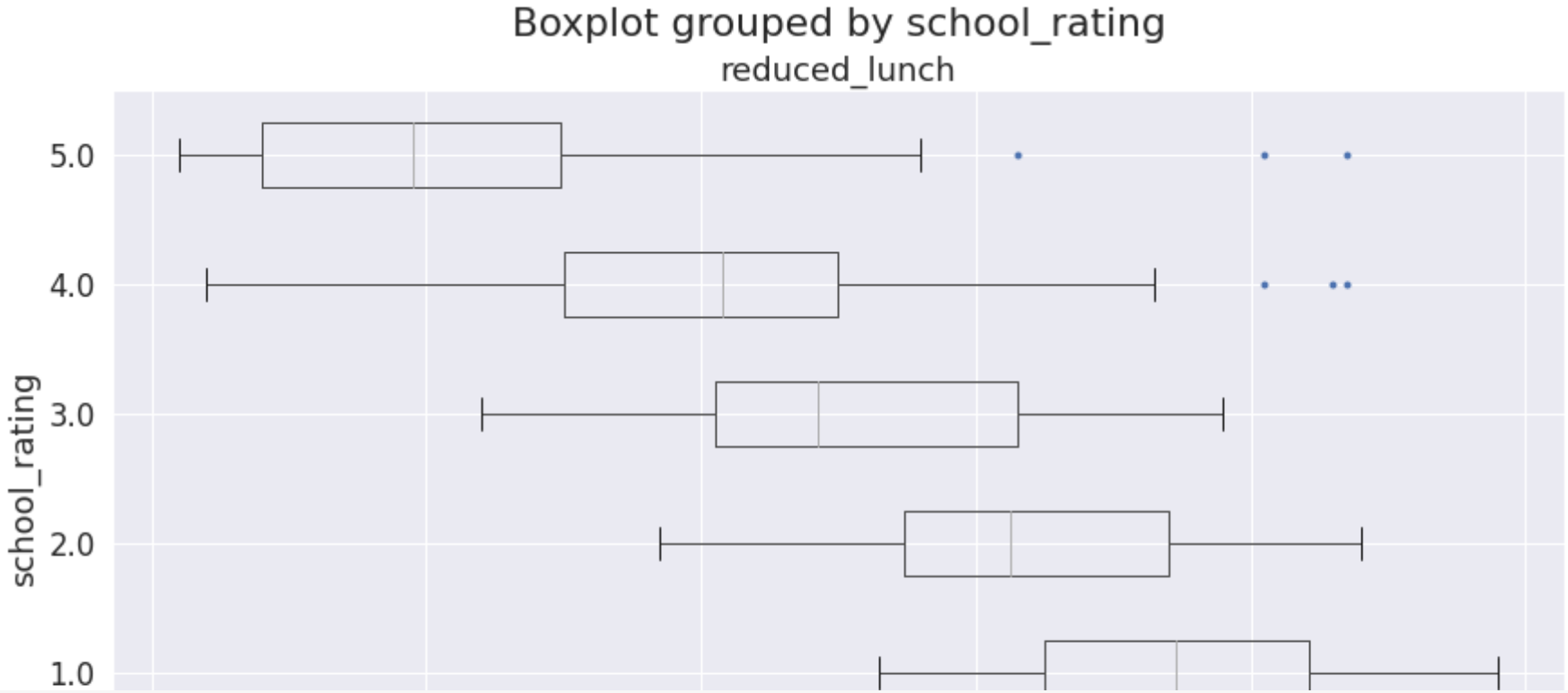
	reduced_lunch							
	count	mean	std	min	25%	50%	75%	max
school_rating								
0.0	43.0	83.581395	8.813498	53.0	79.50	86.0	90.00	98.0
1.0	40.0	74.950000	11.644191	53.0	65.00	74.5	84.25	98.0
2.0	44.0	64.272727	11.956051	37.0	54.75	62.5	74.00	88.0
3.0	56.0	50.285714	13.550866	24.0	41.00	48.5	63.00	78.0
4.0	86.0	41.000000	16.681092	4.0	30.00	41.5	50.00	87.0

```
df[['reduced_lunch','school_rating']].corr()
```

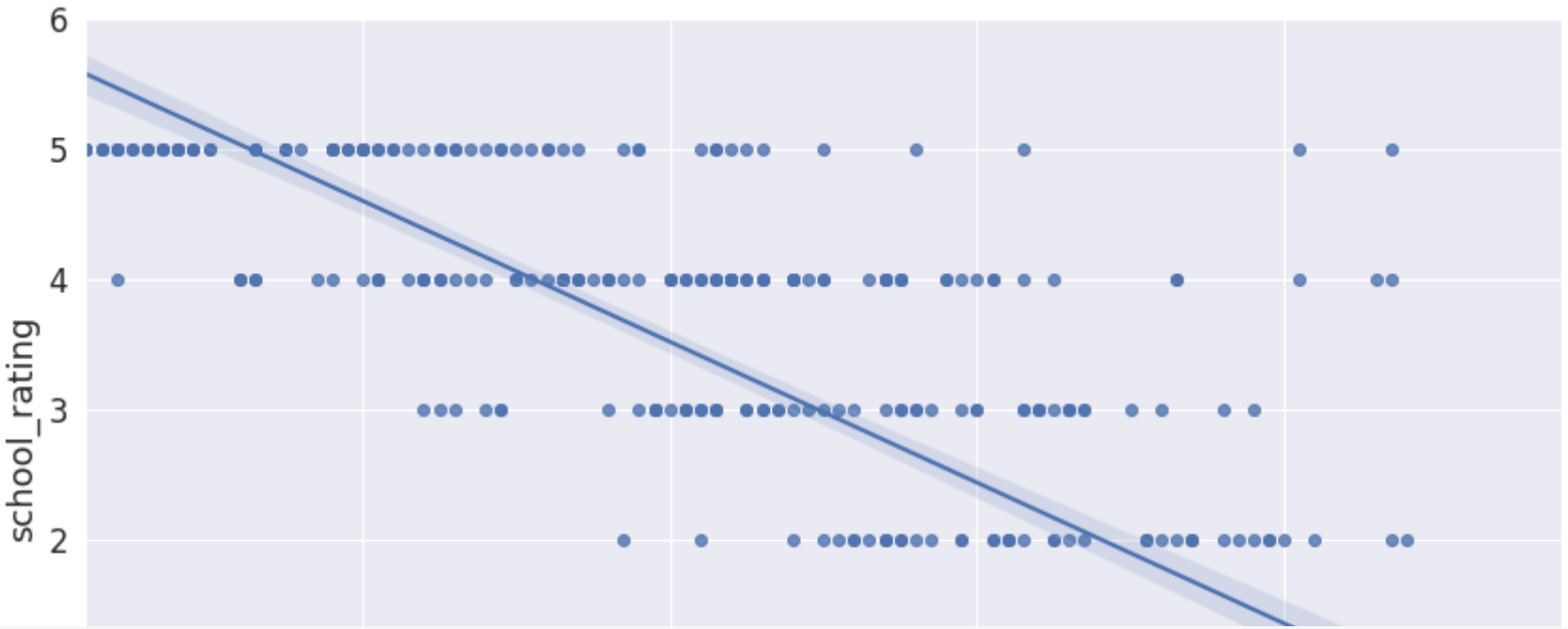
	reduced_lunch	school_rating
reduced_lunch	1.000000	-0.815757
school_rating	-0.815757	1.000000

```
# box and whisker plot
fig,ax = plt.subplots(figsize = (14,8))
ax.set_ylabel('school_rating')
_=df[['reduced_lunch','school_rating']].boxplot(by = "school_rating",figsize = (13,8),vert = False,sym = 'b.',ax = ax)
```

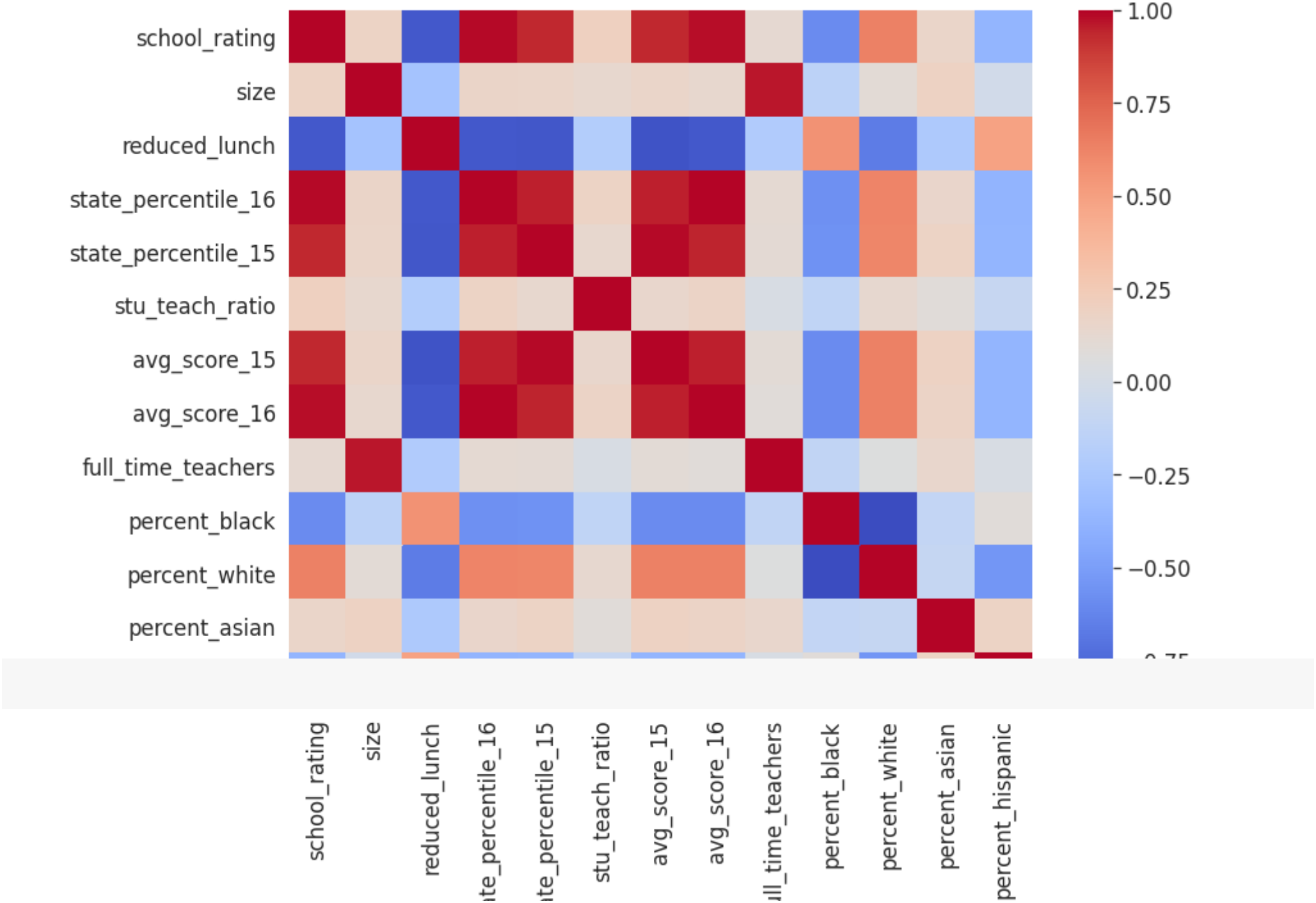
```
/usr/local/lib/python3.7/dist-packages/numpy/core/_asarray.py:83: VisibleDeprecationWarning: Creating an ndarray from ragged ne
  return array(a, dtype, copy=False, order=order)
```




```
# scatter plot
plt.figure(figsize = (14,8))
_ = sns.regplot(data = df,x = 'reduced_lunch',y = 'school_rating')
```




```
# corelation heatmap
corr = df.corr()
_,ax = plt.subplots(figsize = (13,10))
_ = sns.heatmap(corr,ax = ax,xticklabels = corr.columns.values,
                yticklabels = corr.columns.values,
                cmap = "coolwarm")
```


school_rating
size
reduced_lunch
state_percentile_16
state_percentile_15
stu_teach_ratio
avg_score_15
avg_score_16
full_time_teachers
percent_black
percent_white
percent_asian
school_rating
size
reduced_lunch
avg_score_15
avg_score_16
percent_black
percent_white
percent_asian
percent_hispanic
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50

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